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THE FORESTER

Vol. VII

NOVEMBER, 1901

No. 11

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THE PLATFORM OF THE FORESTER

In order that the good will of its readers may become as effective as possible in aiding to solve our present forest problems, the *FORESTER* indicates five directions in which an effective advance is chiefly needed.

1. The forest work of the United States Government which is now being carried on by the Department of Agriculture, the General Land Office, and the Geological Survey conjointly, should be completely and formally unified. The division of authority between the three offices involves great waste, and consolidation is directly and emphatically pointed to by the present voluntary co-operation between them.

2. A system of forest management under the administration of trained foresters should be introduced into the national and state forest reserves and parks.

3. Laws for the protection of the forests against fire and trespass should be adapted to the needs of each region and supported by the provisions and appropriations necessary for their rigorous enforcement.

4. Taxation of forest lands should be regulated so that it will encourage not forest destruction but conservative forest management.

5. The attention of owners of woodlands should be directed to forestry and to the possibilities of applying better methods of forest management.

Persons asking themselves how they can best serve the cause of forestry will here find lines of work suggested, along which every effort will tell. No opportunity for doing good along these lines should be neglected.

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The lectures cover, in the course of a year, all branches of forestry exclusive of forest aesthetics and of forest gardening.

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For further information apply to

1. The yearly course comprises 12 consecutive months.
2. In addition a special winter term is offered ending March 15.
3. A three-monthly tour through the European forests will begin April 1, 1902.

C. A. SCHENCK, Ph.D., Biltmore, N. C.

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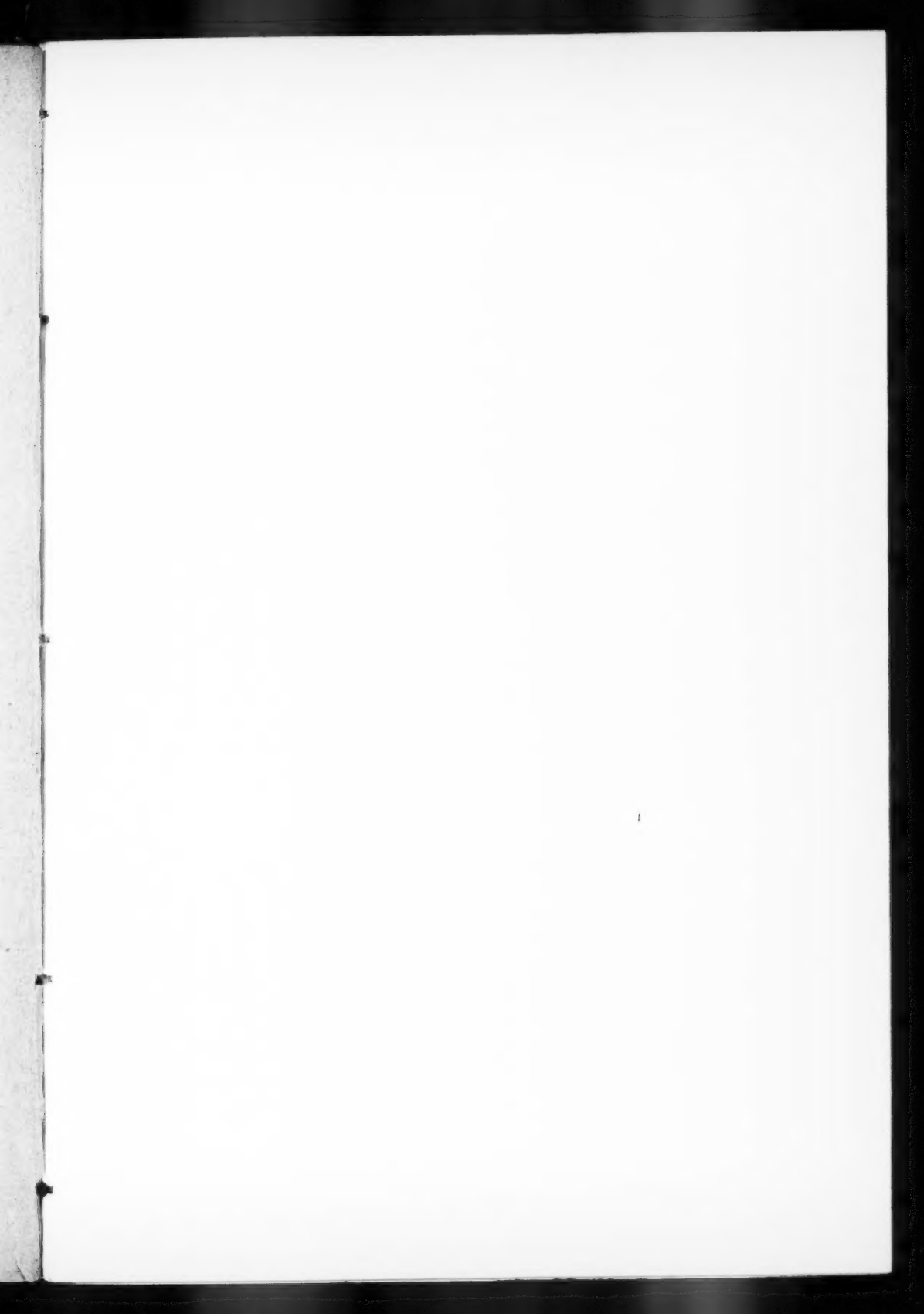
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NEW YORK.





From Yearbook U. S. Depart. of Agriculture, 1900.
A FOREST IN THE SOUTHERN APPALACHIANS, DOGWOOD IN FLOWER.

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NEWS, NOTES, AND COMMENT.

American Forestry Association.

The annual meeting of the American Forestry Association will be held in Washington, D. C., on Wednesday December 11th. The election of officers, presentation of reports, and such other business as requires to come before the entire Association will be transacted at this meeting. There will be two sessions: one at 10:30 A. M. and the second at 2:30 P. M., the meeting place to be the same as last year, in the Metzgerott Building, 1110 F Street.

Attendance At the Forest Schools.

The rapid spread of interest in forestry throughout the country is being felt in educational circles this fall, and a most gratifying increase in attendance is reported from the leading forest schools. At the New York State College of Forestry, thirty-eight students are enrolled this fall, an increase of one hundred per cent. over the attendance of last year. The men are divided as follows: Three Seniors, six Juniors, nine Sophomores, fourteen Freshmen, the remainder being special students.

From New Haven the following letter has been received from Mr. Henry S. Graves, Director of the Yale Forest School: "In reply to your letter I would say that there are in the Yale Forest School this year ten men who will be classified as second-year students, and twenty-one who will be classified as first-year men. Our incoming class is so large that it has been necessary for us to refuse admittance to three men who applied after the opening of the school."

There are eleven students at the Biltmore Forest School for the winter course.

The men attend lectures every morning for two hours at the office of the Director, Dr. C. A. Schenck. During the afternoons the students accompany Dr. Schenck to such places as his practical tasks as forester of the Biltmore estate call him.

In the South.

Last month in this department mention was made of the lively interest being taken in forestry by private owners of woodlands in the Southern states. Since then the Bureau of Forestry has received additional requests for aid in the management of timberlands in that section.

The Baltimore and Ohio Railroad Company has asked for a working plan for its tract of 125,000 acres of mixed hard and soft-woods, situated in Nicholas and Pocahontas counties, southeastern West Virginia.

A request has been received from the Georgia Iron and Coal Company, with headquarters at Atlanta, Ga. This company desires advice in the handling of two tracts; one of 16,000 acres in Bartow County, and the other of 30,000 acres in Dade County.

The foregoing include only the most recent requests for assistance from private owners in the South. The Bureau for more than a year past has been cooperating in the handling of timber tracts in that section. At Sewanee, Tenn., the domain of the University of the South consisting of 7,000 acres of hardwoods, is being lumbered according to a working plan made by the agents of the Bureau. A working plan has also been completed for 100,000 acres of pine lands in Arkansas belonging to the Sawyer & Austin Lum-

ber Company, of Pine Bluff. Another interesting piece of work just completed by the Bureau of Forestry is a working plan for a tract of 60,000 acres in southeastern Missouri, belonging to the Deering Harvester Company of Chicago.

During the summer the agents of the Bureau of Forestry have been at work collecting the necessary data for a working plan for 85,000 acres in Polk and Monroe counties, East Tennessee. This tract is the property of U. S. Senator George Peabody Wetmore, of Rhode Island, and the timber consists of a wide range of hardwoods. A working plan has also been made during the past field season for a tract of 60,000 acres in the Cumberland mountains of Tennessee.

In addition to more than a million and a half acres of private forest land in the South, the Bureau of Forestry has requests for the handling of more than 2,500,000 acres in other sections. Added to this are nearly 50,000,000 acres of United States forest reserves and state lands, for which the Bureau is asked for technical assistance from time to time.

Not only have the people throughout the country shown interest in practical forestry, but Congress at its last session so far recognized the importance of the government's work in this line as to raise the Division of Forestry to the rank of a Bureau. The annual appropriation was also increased from \$88,520 in 1900 to \$185,440 in 1901. Still the demands upon the Bureau continue to greatly outstrip its resources.

A Good Example.

A rather unique forest exhibit is being displayed on the bulletin board in the Plainfield (N. J.) Public Library.

The exhibit consists of eighteen specimens of wood grown under the direction of the State Forester on an eight-acre piece of land in southern New Jersey, and represents the uniform growth of two years. The specimens measure a little less than a foot in length, and are suspended by twine from one end of the bulletin board to the other. The specimens are numbered and a key and explanatory notes accompany them.

Above the specimens hangs the colored chart of the U. S. Bureau of Forestry, entitled, "Lessons in Erosion due to

Forest Destruction," and below is given a list of books in the library on the subject of forestry, among them being the file of the FORESTER. Emma L. Adams, the librarian, makes the excellent suggestion that public libraries might render a great deal of assistance in this way in making forestry more popular with readers.

Duties of Forest Rangers.

Capt. Seth Bullock, supervisor of the Black Hills forest reserve, has issued instructions to the forest rangers under his charge, that deserve more than passing notice. Capt. Bullock was formerly sheriff of Deadwood, S. D., in the old days when nerve and bravery were required, and is a personal friend of President Roosevelt. A copy of his list of instructions has reached the notice of the President, who admires its business-like tenor. The notice is as follows:

"DEADWOOD, S. D., Sept. 4, 1901.

"To Forest Rangers,

"Black Hills Forest Reserve:

"Sirs: Your attention is called to the fact that in a number of instances the monthly reports of the forest rangers of this reserve show but a few miles travelled per day while patrolling their districts. From two to ten miles frequently appear as all that is accomplished, no other work being undertaken or reported as having been performed.

"You are advised that a forest ranger is supposed to patrol his district on horseback, and that the patrolling of districts on foot will not be permitted. A few monthly reports—very few, I am glad to say—indicate that that particular ranger performs as little service as he can during the month, just enough to have his report approved and escape censure. Rangers of this class must not be disappointed if they are furloughed this fall, and an additional leave of absence granted them next summer. Shiftless, careless work will not be tolerated in the future. An honest day's work honestly performed is what is required and will be insisted upon.

"You are expected to thoroughly patrol your district, getting to every part of it at least once a month, familiarizing yourselves with every trail and every road upon or through it; by whom and for what purposes they are used. You should also

know the name and occupation of every resident of your district, temporary as well as permanent, and ascertain by what right they are upon the reserve and what their business is. An especial and vigilant watch must be kept for forest fires. Visit often the places frequented by campers, as they are a prolific source of fires. Establish correspondence at various points within your district with persons residing therein who will keep you advised of forest fires and depredations, either on the forest reserve or on the public lands near by.

"See that the forest fire notices are put up and maintained upon all the public roads and trails of your district. Report all cases of fire and trespass as soon as you have knowledge of them. In all your intercourse with the public extend such treatment that every honest man within your district shall be your personal friend.

"SETH BULLOCK,
"Forest Supervisor."

As many persons know, the ranger service in a number of the reserves is decidedly inadequate. The rangers do their work in a listless manner and as a result the reserves suffer great losses from fire, and timber thieves.

One of the things most needed in the United States forest reserves is a thoroughly competent ranger service and if rules similar to those laid down by Capt. Bullock, were adopted and enforced in the reserves generally, the present unfortunate state of affairs in many sections could be prevented.

Papers from the Denver Meeting.

Elsewhere in this number will be found a paper on the "Black Hills Forest Reserve," by Mr. E. M. Griffith, of the Bureau of Forestry. This paper is one of the series read at the Denver meeting of the American Forestry Association. The Black Hills reserve is a most striking example of the great economic value of forests to a community, and Mr. Griffith's article was written after two season's work in this particular locality.

In the October number of *THE FORESTER* we failed to note that the interesting paper on "Insect Enemies of Forests and Forest Products," by Dr. A. D. Hopkins, of Morgantown, W. Va., had been read

at the Denver meeting. The remainder of these papers will be printed as early as space will permit.

The Fire Record.

California. A forest fire raged near Pacific Grove and Monterey during the second week in October. The damage done is estimated at \$100,000; and many thousands of acres of brush and timber were burned over. At one time the fire became so threatening that messengers were sent out for help. Large parties of men fought the flames for a full day and at one time the fire reached a point within half a mile of the town.

One of the most disastrous forest fires in recent years occurred in northern California during the months of July and August. A short notice of this fire was printed in the September *FORESTER*, but owing to its seriousness it is felt that the facts which have come to hand since should be published.

This fire started July 1st on a sheep range, about 10 miles east of Red Bluff, and is reported as started by herders to clear brush-land for sheep range. Extremely dry, hard winds blew almost constantly during July and usually from the north or south, so the fire "angled" across the wind generally. The burned area is nearly all sheep range and timber land, and is about 40 miles long by 5 to 15 miles in width, and lies mainly in the country drained by Deer and Sulphur Creeks and some smaller streams. The fire continued to burn steadily until August 10, fully forty days. During much of this time another great fire was devastating the ranges further east.

The creeks of this region are used, where their bottoms join the Sacramento Valley, for irrigating. A lumber flume terminating at Red Bluff, which brings down lumber from the Champion Mill, is also fed by these mountain streams. As these creeks head in the region of heaviest rain and snow fall, they are among the most valuable tributaries to the Sacramento River. Such fires will undoubtedly greatly affect the flow of these streams, thus decreasing their value for irrigation and at the same time much injury to the navigation of the river will result.

We quote the following from a letter received from a gentleman who recently visited the scene of this disastrous fire:

"It is now a region of desolation, where before was a dense forest cover—not of large timber, usually, but of small evergreens, and, on the slopes, heavy brush.



THIS VIEW SHOWS EFFECT ON FOREST OF REPEATED FIRES.

Already the valuable streams flowing down from the burned district show a sensible diminution in volume, compared with their flow of previous years at this season.

"The other day, in talking with some men who have been engaged largely in lumbering here for thirty years, the fact was brought out and emphasized without a dissenting voice, that the flow of all these streams is reduced one-half since the forest covering of the watersheds has been so largely destroyed.

"More serious by far than the diminishing of these streams (which irrigate only a comparatively small portion of the great valley) is the effect in reducing the sub-moisture which make great areas so famous for productiveness, without irrigation. The sub-moisture supplies a water-strata so close to the surface that it may be pumped for the irrigation of a still greater area."

Pennsylvania. During the last week of October forest fires raged more fiercely than

ever before throughout Westmoreland, Fayette, and Somerset, as well as in adjacent counties. Hundreds of mountaineers turned out to fight the flames and save property, and miles of valuable timber, together with farm houses, were burned. A cloud of smoke hung over the Pennsylvania Railroad for fifty miles from Greensburg to Johnstown, and by day the sun was almost obscured.

The fire did the greatest damage along the Chestnut Ridge where the forest is dry as tinder, as not a drop of rain had fallen for more than sixty days. On the southeast side of Uniontown the flames approached to within four miles of the town and hundreds of people turned out to fight the fire. Brush was burned away and counter fires started to protect tracts of timber and houses.

The flames threatened the cultivated areas of the three counties. The water supply was low in all the burning area so that there was little hope of saving property when it was once reached by the fire.

The water supply was scarcely enough to afford drinking water for cattle. Wild animals were seen fleeing before the flames. In their fear they approached farmhouses, seeking shelter. At Ridgeview Park, near Millwood, 118 cottages and a summer hotel were threatened with destruction and a big force of men worked



THE RESULT OF RECURRING FOREST FIRES, THE FOREST FLOOR HAS DISAPPEARED.

to surround the grounds by burning a safety belt around them.

The Pennsylvania Railroad did all in its power to look after its lines and there was no interference with traffic. The

Conemaugh, Loyalhanna, Kiskimmietas, and Youghiogheny Valleys are embraced in the burned and threatened areas. The water supply in the city of Uniontown is almost exhausted for ordinary purposes.

The fires in many cases were caused by the carelessness of hunters.



FALLEN AND STANDING FIRE-KILLED TIMBER READY FOR THE NEXT FIRE.

State Forestry in Connecticut. Forest improvement and extension is being taken up in a practical manner by the State of Connecticut. A State Forester has been appointed and an appropriation for the purchase of lands on which to experiment has become available. The Board of Control of the Connecticut Agricultural Experiment Station at New Haven, which was empowered by an Act of the General Assembly at its January session to select a State Forester, has chosen Mr. Walter Mulford for the position.

The Act passed by the Legislature was entitled "An Act Concerning the Reforestation of Barren Lands," and in sub-

stance, provision is made in it for purchase by the State Forester of land suitable for the growth of oak, pine, or chestnut timber, such land to be used as a State Park in the following way:

The land will be deeded to the State of Connecticut, but is to be assessed and taxed by the town in which it lies at the same rate and in the same way as similar land held by private owners. It is to be managed in such manner as to secure as rapid and profitable a growth of timber as possible, artificial planting of valuable timber trees being resorted to wherever necessary. It may, if desirable, be fenced, but not with barbed wire. The whole will be under the charge of the State Forester.

It is hoped that this undertaking may be of practical use in restoring to forest production lands at present nearly worthless. Further, that such lands may be so tended as to serve as an object lesson in tree planting and in the proper management of woodlands, thus leading to a more rational and consequently more profitable handling, by their owners, of the cord-wood lands and timber lands of Connecticut.

The amount appropriated by the State for this object is \$2,000 for two years, and no land can be bought, under the provisions of the act, for more than \$4.00 per acre.

Mr. Mulford has issued a notice to owners of waste lands and cut-over woodlands suitable for the growth of timber, calling their attention to the provisions of the law, which went into effect on October 1st.

Interest in Private Forestry. The South Active. In October, 1898, the U. S. Department of Agriculture, through its Division of Forestry, first offered to give practical

assistance to farmers, lumbermen and others, in the handling of their forest lands. The response to this offer was immediate, and in three years private owners of over 4,000,000 acres of woodland have availed themselves of the opportunity.

In no part of the country is wider interest being shown in conservative forest management by private owners than in the Southern States. Up to date the amount of private lands in the South for which advice in handling has been asked of the Bureau of Forestry is 1,534,000 acres, and a very large part of the work which will be done by the Bureau for private owners in the immediate future will be in that section.

The industrial development of the South on all sides during the last ten years has been remarkable, but no single industry has made greater strides than the lumber business. This is not surprising when it is considered that the Southern States contain a greater percentage of forest area than any other section of the United States. The South has become a very important factor in the lumber markets of the world,

Within recent years many lumbermen from the North have been attracted to the southern field; the forests of Pennsylvania, Michigan, and Wisconsin having been almost exhausted, many of the leading woodmen of those states are now engaged in cutting timber in the South. The forests of the three states just mentioned were once considered inexhaustible, but once lumbering begins in earnest no forest area is inexhaustible. The present conditions of the forests in many northern and eastern states is sufficient evidence on this point.

The South now has a great army of lumbermen cutting away its forests, and in spite of their great extent, unless the cutting is done on conservative lines, the day is not far distant when the conditions now existing in the North and East will



A SPRUCE FOREST IN THE SOUTHERN APPALACHIANS, NORTH CAROLINA.

not only through its wealth of forests, but from the fact that it has unusually good transportation facilities. In reaching the home markets Southern lumbermen have the advantage of a number of excellent railroad systems to handle their products and such important seaports as Norfolk, Charleston, Savannah, Mobile, Tampa, New Orleans and Galveston provide excellent outlets through which to reach the foreign markets.

be found there also. For this reason it is encouraging to see the interest in practical forestry displayed by the owners of private timberlands. This tendency to cut timber conservatively, looking to the future value of the forests, as well as to present profits, must be the safeguard. Conservative methods are now being taken up in the North when almost too late, and it will be greatly to the credit of southern lumbermen if they begin the protection of

their forests in time; taking to heart the sad experience of people in other sections.

Meeting of National Live Stock Association.

Great preparations are being made for the fifth annual meeting of the National Live Stock Association, which will be held in Chicago on December 3d. The attendance promises to be the largest in the history of the organization. The committees appointed some time ago to draft bills for national laws to be submitted to Congress have accepted the drafts of bills as follows:

Federal inspection on interstate shipments of live stock; Government inspection of woolen goods; allowing settlers in the arid and semi-arid districts the right to exchange lands of equal value with the Government so as to solidify their holdings; for a Second Assistant Secretary of Agriculture, who will be required to give his sole attention to the live stock industry; for a classified assessment of live stock.

The grazing question will receive close attention, especially the matter of grazing on public lands. Mr. Gifford Pinchot is to be one of the speakers and his subject "Grazing in the Forest Reserves" will attract the closest attention. Mr. Pinchot has studied this question very closely and his views as set forth in a short article in this number, present a most reasonable solution of a problem that at present is causing much trouble throughout the far West.

The list of speakers already secured for the convention includes the following: Hon. James Wilson, Secretary of Agriculture; D. E. Salmon, chief of the Bureau of Animal Industry; Frederick V. Coville, botanist of the U. S. Department of Agriculture; Governor Richard Yates, and Carter Harrison, mayor of Chicago; Senator Warren and Col. Torrey, of Wyoming.

Tree Planting in Memory of President McKinley. An appropriate and enduring memorial to the late President McKinley is proposed by Mr. Orlin M. Sanford, of Pittsburg, who suggests that on Arbor Day and at other times trees be planted in honor of the third martyr President.

The suggestion has met with the warmest approval, and letters commending it have been received by Mr. Sanford from the White House, members of the Cabinet, Governors of States, superintendents of instruction, presidents of state agricultural colleges and many other distinguished men. Hon. James Wilson, Secretary of Agriculture and President of the American Forestry Association, writes:

"I think I can take a very important part in your matter—I can furnish some of the trees. I propose to send out next spring 50 trees through each member of Congress suitable for each locality. If you care to carry out your work further I can say to them that when they send their quota of trees out to their constituents they suggest that the recipients plant one at least in each neighborhood in memory of President McKinley. It is easy enough to get an idea started, but the getting of suitable trees is quite an important matter. I propose to send out long-lived trees—oaks, elms, maples, walnuts, etc. So I think my contribution to the furtherance of your idea may be worth while."

Another letter received by Mr. Sanford is from Mr. Gifford Pinchot, chief of the Bureau of Forestry and is as follows: "I assure you of my hearty approval of your proposed plan, and my willingness at all times to do anything in my power to further it. I am pleased to note the many immediate and favorable responses which your suggestion has received and so well deserves. I feel certain that if next Arbor Day is designated as a time for planting trees in memory of President McKinley the people throughout the country will promptly take up the matter. The appropriateness and value of such a memorial is at once apparent, and Mr. McKinley was so universally loved that I am sure on such an occasion as the one suggested the number of trees planted would be unusually large."

In New Hampshire.

Mr. Joseph T. Walker, Secretary of the Society for Protection of New Hampshire Forests has published a report, which covers the work done by the Society during the first six months of its

existence. Beginning with the formation of this Society in the early part of the present year, strong efforts have been made by its members to arouse interest in forest preservation among the people throughout the state.



A NEW HAMPSHIRE SPRUCE FOREST.

Articles calling attention to the great need of conservative treatment in the handling of New Hampshire forests were sent to the newspapers of the state during early spring and summer. To interest the great number of summer visitors in the Society posters setting forth the object of its work were sent to every boarding house and hotel in the state.

On May 9th, Arbor Day, Hon. John M. Woods, of Boston, gave an address at Somersworth; June 5th, Hon. Joseph B. Walker, of Concord, delivered an address on forestry at Freedom. The Society was also represented at the July meeting of the Appalachian Club.

During the month of August a series of meetings was held in the mountain regions. The leading speakers at these meetings were Dr. John Gifford, of the New York State College of Forestry, and Dr. John D. Quackenbos, of New York. The object of these meetings was to arouse public interest, and it is believed they proved successful in awakening a sentiment favorable to a scientific administration of forests.

At a meeting of the Executive Committee of the Society held in September, it was decided to push the work of the

Society by lectures on scientific and practical forestry, to be given during the present fall and coming winter, in different sections of the state. To carry into effect this purpose, it was found that more money was necessary, and it was decided to increase the annual dues to one dollar a year, establish a patron membership fee of five dollars per year, a sustaining membership of twenty dollars per year, limited to two years, and allow the life membership to remain as already fixed.

The executive committee also decided to employ a practical forester, at a salary of \$1,000 per year. This man is to give lectures throughout the state, and also visit lumbermen, and those having pieces of timber, and instruct them how they can cut it to the best advantage. He is to be at the call of farmers and lumbermen throughout the state free of expense. The Boston & Maine Railroad have agreed to furnish him transportation, as they are largely interested in this subject; they have also agreed to make a contribution towards the cause.

The Society, in spite of having been in existence but a short time, has accomplished considerable work. The supply of funds has been limited, but all bills have been promptly met. Encouraged by the interest aroused, the future work noted above was outlined, and to meet the expense of this new campaign a special contribution is being taken up. Ex-Governor Frank W. Rollins, President of the Society, has given \$100 and several others have promised a like amount. Altogether this New Hampshire Society has accomplished much good, and the example they are setting should arouse the neighboring states of Maine and Vermont to action, on the very important question of conservative treatment of their forests.

The Turpentine Industry.

During the past summer Dr. Charles H. Herty, of the University of Georgia, and a collaborator in the Bureau of Forestry, made a close study of the turpentine industry of the southern United States. Through wasteful methods this industry has been greatly injured during recent years, and unless turpentine operators at an early date adopt a more conservative plan of gathering the product, it

will soon be a thing of the past. Dr. Herty's investigation was made with the view of devising ways to improve the present threatening conditions, and the result has been the collection of many valuable facts from which it is felt practical plans will result to assist in the production of naval stores. The results of Dr. Herty's investigation will be published at an early date.

At a recent meeting of the directors of the American Forestry Association Dr. Herty's work was discussed and produced such a favorable impression that the following resolutions were passed:

"WHEREAS, the perpetuation of the naval stores industry is of vital importance to the South, and

"WHEREAS, the present methods of gathering turpentine are destructive to the forest and threaten the extinction of the industry itself, therefore, be it

"Resolved, That the Board of Directors of the American Forestry Association express their hearty approval of the investigation now in progress by Dr. C. H. Herty as a collaborator of the Bureau of Forestry, to devise conservative methods of turpentine cropping and to ascertain their practicability."

Forest Reserve Wanted in Maine.

In a paper read at the semi-annual meeting of the Maine State Board of Trade, Mr. Francis Wiggin, of Portland, strongly advocates establishing forest reservations in that State. Mr. Wiggin's paper on "The Preservation of Maine Forests," points out the great damage likely to result to some of the State's leading industries unless something is done to check the present reckless destruction of the forests. The views expressed in his paper are shared by many of the leading business men of the State and it is hoped that they many arouse public sentiment to that point which will lead to early and intelligent action on the part of the legislature. There is no State in the Union where the public welfare depends to a greater extent on the forests than in Maine.

A portion of Mr. Wiggin's paper is reprinted here:

"The preservation of our forests means permanent employment for thousands of

wage earners. It means comfortable homes for the wives and children of these laborers. It means the preservation of our magnificent water powers. Other great industries, as the cotton and woolen industries and all other industries that depend on water for their power, are interested in this great question. This State has many and varied resources. Many of them are practically inexhaustible. There is no danger of exhausting our granite; there is no danger of exhausting our lime; there is no danger of exhausting our slate. But our lumber resource is worth a hundred times more than all these combined, and this resource is in great danger of being exhausted.

"What can the State do, and what can the State Board of Trade do? The danger to our forests does not come so much from the extensive land owners and the large companies as from the small owners. The small owners in many cases are heirs of former large owners, and they have no particular interest in their lands except to realize as much money as possible from them at once. The large owners are more conservative and many of them draw their contracts for the sale of stumpage with great care and strictness.

"The International Paper Company, which owns nine pulp and paper mills in this State, made and is enforcing a rigid rule in cutting lumber on the 300,000 acres or more which it owns in Maine. This rule provides that no tree less than 12 inches in diameter, breast high, shall be cut. The Great Northern Paper Company, which owns the paper mills at Millinocket and Madison, has a similar rule for its Maine timber tract of over 300,000 acres. These two companies and the Berlin Mills Company employ skilled foresters on their lands.

"Shall the State of Maine look on resignedly while the destruction of the woods upon which the State's life and prosperity depends goes on unrestrained and take no action in the matter? There is the same authority under the constitution for the State to examine the right of eminent domain that there is in the States of Pennsylvania, New York, New Hampshire, Minnesota, Michigan, or California. Maine has three important rivers which have done more for the industrial develop-

ment of the State than all the other causes combined. But let the destruction of our forests go on for the next 25 years at the same rate, and in the same reckless manner that has been the case during the last 25 years, and, unless scientific experts are all wrong, the volume of water will not be so constant as now. There will be greater and more disastrous floods in the spring, because the forest lands being stripped will not retain the rain or the water from the melting snows, while on the other hand the rivers will run very low during the heated summer and during the fall and winter.

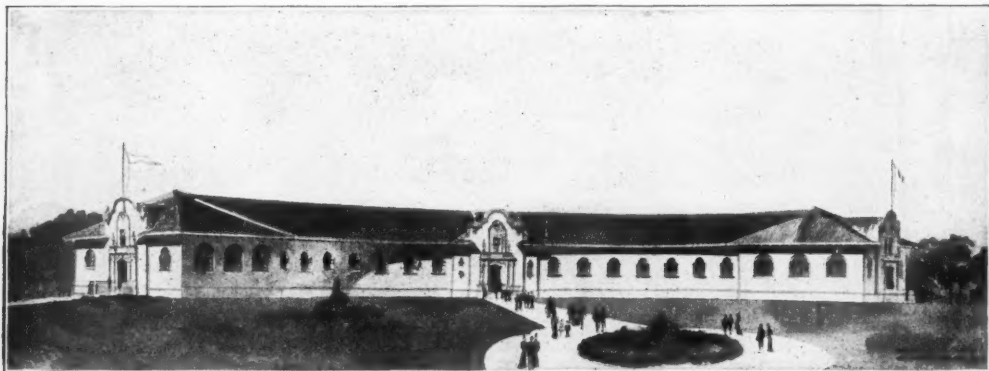
"The poorest and cheapest land in the State is adapted to forest growth, such as the sides of hills and mountains, rocky and barren lands where nothing but trees could be made to grow. Such land could be purchased at a low price per acre and by proper regulations and care could be made to pay large interest on the investment.

"What other State could set apart as reservations three such sections as the six townships containing the five great Rangeley lakes, or the ten townships that contain

Mr. Wiggin recommended that the State Board of Trade appoint a committee to look thoroughly into the question of forest preservation, and that, if such action seems appropriate after the report of the committee has been received the board address the legislature by resolutions or otherwise; that immediate steps be taken to arouse public interest; that Arbor Day be more generally observed; and that a course in forestry be established at the University of Maine.

South Carolina Exposition.

The South Carolina Inter-State and West Indian Exposition will open at Charleston, South Carolina, December 1, 1901 and close June 1, 1902. Its purpose is to display the material resources and the manufactured products of the United States, and particularly of the Southern States of the Union. The Exposition Company has been chartered by the State of South Carolina, with a capital stock of \$250,000 and resources amounting to \$1,250,000. The special object of the Exposition is to develop the commercial and industrial opportunities of the West Indies and



MINERALS AND FORESTRY BUILDING AT SOUTH CAROLINA EXPOSITION.

the great Moosehead Lake, with Kineo and the Spencer Mountains, or the twelve townships that would include our highest elevations, Mt. Katahdin, and the beautiful West Branch lakes? Could these three sections be set apart for use as State parks, posterity would have cause to hold in grateful remembrance the wisdom and foresight of the public-spirited men who were instrumental in bringing about such a desirable result."

to establish closer trade relations between the United States, Cuba, and Porto Rico.

An extensive Government exhibit will be made by special arrangement with the President of the United States and the heads of the several executive departments at Washington. Twenty states and cities of the Union have provided for representation at the Exposition, and special exhibits have been secured from Cuba and Porto Rico.

The forest exhibit of the U. S. Bureau of Forestry at Buffalo will be transferred to Charleston in time for the opening of the Exposition. The Forest Building at Charleston, a view of which is printed here, is a very picturesque structure, of the Spanish Mission type, containing 20,000 feet of floor space.

It is true that the United States has had almost too many expositions during late years, yet the South Carolina venture is most welcome. Denied financial aid by the national government in the very beginning, its promoters have pluckily gone ahead, and as the time for its opening draws near it becomes quite evident that they will have an exposition quite worthy of the cause it represents. The south is developing with great rapidity and the South Carolina Exposition will do much to bring its interests in touch with other sections of our country as well as with foreign nations. The FORESTER extends its best wishes for the success of the affair.

Michigan is Waking Up.

At the last session of the Michigan Legislature a tract of state land in Crawford and Roscommon counties, in the central part of the state, was set apart for the use of the State Forestry Commission as an experiment station. The tract comprises 100,000 acres surrounding Houghton and Higgins Lakes. A party of men has just gone over the land to investigate its possibilities.

The expedition which has just returned was composed of Mr. T. H. Sherrard, of the U. S. Bureau of Forestry, State Land Commissioner Wildey, State Geologist A. C. Lane, State Trespass Agent Skeels, Frank Leverett, of Washington, a member of the United States Geological Survey, and Prof. Charles A. Davis, the head of the department of forestry at the University of Michigan. An exhaustive study of this region is being made by a party under the direction of Mr. Sherrard.

The State Forestry Commission has adopted resolutions asking the Auditor General and State Land Commissioner to withhold from sale and homestead entry all lands within the boundary of the forestry reserve, and complimenting the Agricultural College on the establishment of a course in forestry.

The Philippine Forestry Bureau.

Capt. George P. Ahern, Director of the Forestry Bureau of the Philippines, after spending several months in the United States studying forest conditions, has returned to his headquarters in Manila. The reorganization of the forest service in the Philippines was ordered by the Philippine Commission and Captain Ahern was directed to proceed to the United States for conference with the forest authorities of this country. He was further empowered to employ additional foresters and inspectors for the Philippine Bureau, and in the September FORESTER announcement was made of the men who had been selected to fill the new positions.

The act authorizing the reorganization of the Forestry Bureau of the Philippines makes provision for the following employees: Four foresters, at \$200 gold per month; three inspectors, at \$150 per month; one collector, at \$125 per month; four assistant inspectors, at \$100 per month; two clerks, at \$50 per month; twenty rangers, at \$35 per month.

Tennessee Forest Association.

The Tennessee Forest Association, which was organized last August, is holding a meeting at Nashville as this number of THE FORESTER goes to press. The following note is quoted from the advance notice of the meeting sent out by the Secretary, Dr. Wm. B. Hall, Jr.: "Another hope of the State Forest Association is to encourage tree planting, not only for shade and ornamental purposes in streets and parks, but more especially for country homes and farm lands. The Forest Association is accordingly bringing together and disseminating information concerning desirable species of trees, methods of planting and protecting, and expects to secure information from forest experts in regard to the problems of climate and hydrography, and the bearing of our forest resources on such questions. The papers to be read at the meeting on November 12th include such subjects as "The Legislation Necessary to Protect Our Forests," "Forest and Public Health," "The Influence of Forests on the River System of Tennessee," "Twenty Native Trees of Tennessee," "Arbor

Day," "The Influence of Forests on Agriculture and Manufactures."

The Tennessee Forest Association has been quite active in its efforts to arouse the people of that state to a full apprecia-

tion of the need of caring for its remaining forests and this meeting should do the cause a lot of good. A full account of this meeting will be printed in the December FORESTER.

GRAZING IN THE FOREST RESERVES.

BY GIFFORD PINCHOT,

Forester U. S. Department of Agriculture.

TOGETHER with irrigation the grazing question is to-day decidedly the most important problem of the National Forest Reserves. At present only in rare instances does the value of timber annually taken from the forest reserves approach the value of the forage yearly consumed by grazing animals. Perhaps only in a single instance—that of the Black Hills—is timber cutting distinctly the more important industry.

Any adequate consideration of the grazing question must be based upon the following propositions:

1. All the resources of the forest reserves, large and small, should be wisely used for the good of the people. The wealth of the reserves is not limited to the timber, minerals, and water which they supply. The grasses and the forage plants are likewise a resource of prime importance, and they should be utilized.

2. Grazing is primarily a local question and should always be dealt with on local grounds. Wise administration of grazing in the reserves is impossible under general

rules based upon theoretical considerations. Local rules must be framed to meet local conditions, and they must be modified from time to time as local needs may require.



HEAVY GRASS IN WHITE MOUNTAIN APACHE INDIAN RESERVATION, ARIZONA. NO GRAZING WAS PERMITTED HERE.

3. Overgrazing destroys both the forest and the range. The avoidance of it is



GRASS UPROOTED AND SMALL VEGETATION DESTROYED BY TRAMPLING OF SHEEP,
IN BLACK MESA FOREST RESERVE, ARIZONA.



DAM FILLED WITH SILT IN TONTO BASIN, ARIZONA. DRAINAGE BASIN BADLY
TRAMPED BY CATTLE. A DITCH HAD TO BE DUG THROUGH THE SILT
TO GET THE WATER OVER THE DAM.

equally to the advantage of forest protection and of the grazing interests.

It should be remembered that the forest reserves, lying on high ground, furnish summer range for large numbers of animals which could not be carried through the year by the winter range alone.



SMALL WESTERN YELLOW PINE BROWSED BY SHEEP. SUCH DAMAGE IS UNUSUAL EXCEPT WHEN THERE IS OVERGRAZING.

But the problem of grazing in the forest reserves involves more factors than forests to be preserved and stock to be fed. Other interests, of vital consequence to the west, are equally at stake and must be equally protected. None of them can be neglected, nor can any one be considered to the exclusion of the rest. The wise adjustment of the grazing question must be a compromise based on a just consideration of all the various interests concerned.

The irrigation farmer realizes with constantly increasing force that the continuance of the water supply, upon which

his prosperity depends, is inseparably bound up with the preservations of the forests. He points out with justice that the irrigation interests are the great permanent interests over large portions of the West; that the capital invested in irrigation is, on the whole, far greater than that invested in the range and in range stock; and that the destruction of his industry will be the gravest possible blow to the prosperity of the West.

The miner is almost equally interested in the preservation of the water supply, and far more directly so in the continuance of a supply of timber. Some of the great mines of Colorado and other States are already beginning to suffer seriously from destruction of tributary forests.

The railroad man, who prospers with the general prosperity of the country through which his lines pass, favors the development of irrigation, of grazing, of lumbering, and requires vast numbers of ties and vast amounts of timber for the construction and maintenance of his road. His interest varies with that of his largest constituents.

The small rancher in many portions of the West is intensely hostile to the sheep men, chiefly because of the unfair treatment he has sometimes received at their hands. Herders have often taken delight in driving their sheep up to his fence and consuming in a day forage which would have kept his domestic stock all summer. He is often fearful, too, that his interests will suffer at the hands of great cattle corporations through the appropriation of the range.

The cattle man, as a rule, sees in the sheep man a late comer whose more re-



GRAZING SHEEP, BLACK MESA FOREST RESERVE. SHOWING SCATTERING OF THE ANIMALS, IN SPITE OF WHICH OVERGRAZING HAS TAKEN PLACE.



ADMIRABLE REPRODUCTION OF THE WESTERN YELLOW PINE ON THE OLD SHEEP RANGE, BLACK MESA FOREST RESERVE. THE GRAZING HERE WAS ALWAYS MODERATE AND INTELLIGENTLY DIRECTED.

cent industry is driving the original holders of the range off the land whose enjoyment they had come to consider as their right. He contends that the grazing of cattle is less destructive to the forest than the grazing of sheep, and, almost without exception, he takes side with the irrigation interests against the sheep.

The sheep man asserts that large bodies of fodder, inaccessible to cattle through the lack of water or the roughness of the country, may be harvested at a profit by the less exacting sheep; that the prosperity of considerable areas in the West depends on the continuance of his industry; that sheep do not eat trees; and that the per-

petuation of the forest is in no wise endangered by sheep, while the danger from fire is considerably diminished.

It is the province of the forest officer to weigh these various considerations and reach a just conclusion. That his decision will fully satisfy any one of the parties at interest is scarcely to be expected, but a just conclusion is easily within reach. It must rest on the regulation of grazing rather than on its prohibition, and above all on coöperation with the grazing interests in the use of the range with the triple object of the protection of the forest, of the water supply, and of the grazing interests themselves.

ALARMING FOREST CONDITIONS IN COLORADO.

LAST month THE FORESTER called attention to the serious forest fires that had occurred in Colorado during the month of September. Ordinarily the news of forest fires attracts little attention owing to the painful fact that they occur so frequently in various parts of the country. So regular have the forest fires become that during certain periods of each year persons interested in forestry naturally expect such visitations, and speculate as to whether the damage will be greater than usual. A great many more people give the matter no thought.

In the case of Colorado the reports of recent fires are disquieting, to say the least. Not only was a considerable body of valuable timber destroyed (and Colorado has far too little timber now) but mine properties were seriously threatened and only saved through the efforts of hundreds of men who fought the flames. The most serious result of these fires is yet to come—effect on the future water supply.

The accompanying illustrations show how repeated fires literally wipe out a forest and these views show only several of the many such scenes to be found in Colorado. For years these fierce forest fires in this state have been occurring regularly. Now that the forest area of the whole state has been reduced to a dangerously low figure, it is most urgent that the citizens of Colorado turn their attention to improving

conditions that are annually growing worse.

Mr. Henry Michelsen, of Denver, Vice-President of the American Forestry Association for Colorado, kept a record of the forest fires in the state during the year 1900. In that time forest fires in fifteen counties destroyed 758 square miles of timber lands, and at the end of the year there remained in the state only 6,407 square miles of timber lands. This in a total of 103,925 square miles, or only about six per cent. of the whole. Thus it can be seen how serious a matter is the question of forest fires in Colorado.

Agriculture and mining, Colorado's two great and sustaining industries, are the things most threatened. Farming in Colorado must be carried on by irrigation; the mines need an abundance of cheap timber, and that the success of these two leading industries of the state is in a great measure dependent on the forests is very apparent. Colorado is widely and perhaps best known as a mining region; but in spite of the great mineral production, agriculture is the greatest single industry in the state. To show how seriously this great industry is being affected by forest fires, the following quotation from an article written by Mr. Michelsen is most pointed. Mr. Michelsen has for years been an ardent advocate of forest preservation in Colorado, and his conclusions on the subject are drawn from close study

of the changing conditions. In regard to forests and agriculture he writes as follows:

"There were, all told, at the beginning of the year 1900, only a little more than 6,000 square miles of forest land left in Colorado; barely enough to protect the snow holdings and watersheds below timber line. It will be a serious matter for the valley farmers if this limited area shall be materially reduced. Already complaints that the climate is changing

be destroyed, it is safe to say that autumns of low water will cease to be exceptional, and become the rule, and the agricultural territory must shrink.

"Forest fires can be avoided by an enforcement of laws and regulations already existing. It is to be hoped that this may be done during the next season. A relatively small increase in the number of forest employes and a rational management may preserve whatever forest growth remains in Colorado."



SCENE IN NORTHERN PART OF PIKES PEAK RESERVE, BURNT OVER ABOUT 1880.

are being made. Domestic and stock water is scant during the late summers and the long, dry autumns.

"There has been a marked alteration of the volume of water in all streams flowing eastward. Formerly a nearly regular current flowed, moderately increased at times by rains or melting snows. In recent years, spring floods, with increasing violence, have overflowed the banks of the streams, washed away and destroyed growing crops in the bottom lands, sometimes eroding the lands themselves. And every summer now witnesses a drouth. In 1899 the crops of Las Animas county were less than half an average from lack of irrigation. If the forest cover shall continue to

Mining is easily second among the industries of Colorado, in the value of production and the number of persons engaged in it. In discussing the question of mining and forests the following paragraph from a paper by Mr. Gifford Pinchot, read at the Trans-Mississippi Commercial Congress, held at Cripple Creek in July, is most appropriate here: "Prosperous mining is impossible without prosperous forests. With the rare exception of such surface mines as those of the Messaba District, mining requires timber and requires it in enormous quantities. Thousands upon thousands of cords are needed yearly in the larger mines to support the galleries and make possible the

extraction of ore. For the most part, the grade of timber is not high, nor would it bear long transportation. The interest of the miner, therefore, is especially bound up with the preservation of the forests near his mine. It is one of the hopeful signs that the more intelligent miners and the managers of the more important mines are becoming rapidly convinced of the necessity of safe-guarding their supply of timber by the protection of forests near home. Mining may thrive temporarily on the destruction of forests but such thriving cannot last. Successful mining, therefore, is impossible without prosperous forests, and for the most part, such forests must be found in the immediate neighborhood of the mines."

In the Cripple Creek district many mine operators may be found who can speak with authority on the scarcity of wood for mine purposes. Already mine timbers are being shipped to Cripple Creek from Oregon, and as the necessity for securing timber from distant markets becomes more pressing in like measure will the profits of mining companies be affected.

The case of the Great Homestake mine at Lead, South Dakota, should prove a warning to mine operators. During the early years of this company's operation the timber near at hand was cut indiscriminately. The result of careless cutting was repeated fires and suddenly a great scarcity of wood. But the evil effects did not stop there; the hillsides on the headwaters of the streams of this region were denuded of timber and soon the water supply began to fail. To-day the Homestake Mining Company is constructing a flume, at a cost of \$1,500,000, to carry water from a distance. It may further be added that this corporation is now one of the firmest advocates of the policy of protecting remaining forests and of cutting timber on conservative lines. Their wisdom has cost them a high price. In Colorado carelessness is likely to bring about the same state of affairs, and the owners of mines, in view of the present rate of forest destruction, must also expect to purchase experience.

Mr. F. H. Newell, Hydrographer of the U. S. Geological Survey, who has for a number of years been making a special study of the water resources of the western states, has the following to say regarding

the necessity of forest protection in Colorado.

"There is probably no state in the Union where the necessity for the protection of the forests upon the high mountains is more important than in Colorado. A possible exception to this statement is the case of southern California, but even here the disastrous consequences following the reckless burning of the forests are hardly more apparent than in the country around the headwaters of the Platte and Arkansas.

"Not only are the trees of great importance in maintaining favorable conditions for the perennial supply of water, but the forest cover has peculiar value in preventing erosion of the soil and the washing of silt into the reservoirs. The soil on many of the upland mountain parks is extremely light and easily moved by the beating of the rain. This is shown where cattle have traveled through the denuded areas. Each trail or path serves to collect the water from the occasional rains. A few sharp showers quickly cut out these trails into gulleys, and a few years suffice to convert them into miniature canyons and bad lands.

"About twenty years ago when I first visited Colorado there were to be found throughout the mountains little valleys with smooth fertile bottoms. On my last trip through this same country I was dismayed by the appalling change that had taken place. Each of these valleys was traversed by a steep-walled gulley which in places widened out and left no room even for a wagon road. All the rich light soil has been carried away down the streams, sorted into sand and clay banks and left by floods along the rivers or carried out in irrigating ditches, filling them with sediment and increasing the cost of cultivation.

"This rapid erosion among the mountains has been due to cutting and burning the timber and brush, and by the over-grazing of the lands thrown open to the passage of cattle, by the destruction of the thickets and underbrush. Thus not only is the state losing one of its most valuable resources in timber, the material needed by the farmer and miner, but also the soil valuable in one locality is being carried away to become a nuisance in another."

The following statement by Mr. Pin-

shot sums up the situation in Colorado in a most comprehensive manner:

"Citizens of Colorado were among the first men in the West to realize the vital importance of the preservation of forests, and Colorado's interest in forest protection was early recognized by the National Government. The White River Plateau Reserve was the second of the forest re-

servation of the Government, and Colorado should remember that the safety of the state and the safety of the forests are, in the long run, synonymous terms."

While title to the land still resides in the nation, Congress is, of course, ultimately responsible for setting aside and protecting adequate national forest reserves, although even in such cases the



VIEW OF NORTH MAM PEAK, BATTLEMENT MESA RESERVE, COLORADO. SHOWS
ALMOST COMPLETE DESTRUCTION OF FOREST BY DEEP BURNING
GROUND-FIRES.

serves to be established, and it was rapidly followed by the Pikes Peak, Plum Creek, South Platte, and Battlement Mesa Reserves. There has been, however, no addition to the reserved area in Colorado since December 24, 1892. One slight reduction, in the Battlement Mesa Reserve, has just taken place.

"Few regions need forest protection more urgently than Colorado. Her forests are vitally connected with her other interests. Their prosperity forms one of the indispensable factors without which the prosperity of the State can not be permanent nor its industries successful. It should never be forgotten that the only forests which are permanently safe are those which are permanently in the pos-

State or its citizens may reasonably take the initiative in pointing out and urging the reservation of such tracts as appear suitable. In selecting these reserves two considerations are always uppermost, namely the preservation and perpetuation of the forest, both for itself and for the timber it can yield, and also the protection of the water supply upon which all life, animal as well as vegetable, depends. It follows, therefore, that those tracts are most suitable which contain, at the same time, the sources of streams and forests, either mature or growing, sufficient to furnish cover.

In the matter of protecting these national reserves after they have once been set apart the state and its citizens, being

those most nearly interested, have a further duty to perform. This was made manifest recently by the very destructive fires in the mountains west of Denver. To the people of Colorado it is matter of common knowledge that these fires burned for days destroying many acres of valuable standing timber, threatening the existence of several mining camps and their inhabitants, and laying bare the soil at the headwaters of a most valuable irrigation system. All the available machinery of the state was called into action and an appeal was made to the National Government for aid in checking the conflagration. As the people of the state were alive to the damage being done by the fires and to the necessity for extinguishing them, so they should be alert in adopting every means for preventing them. "An ounce of prevention," and so forth, is peculiarly applic-

est administration of other lands to encourage the growth of new forests and to prevent the destruction, by wanton lumbering, or needless fires of those now standing. The U. S. Department of Agriculture through its Bureau of Forestry is always ready to aid by suggestion and otherwise so far as lies in its power: if the state would coöperate, for instance, by requiring that their fish and game wardens should be practical foresters as well, a great step would have been taken. Then let these wardens be held responsible for the economical propagation, protection, and use of the State forests, as they are now held responsible in the case of fish and game.

Where lumbering is going on upon state land, let the wardens superintend the operation by designating the trees to be cut, seeing to the preservation of the



COMPLETE DESTRUCTION BY REPEATED FIRES OF A FOREST, IN BATTLEMENT MESA RESERVE, COLORADO.

able, for the damage done in five days can scarcely be "cured" in fifty years.

In addition to the service which may thus be performed by coöperation between the citizens, the state, and the United States, the local state and county organizations may do much by intelligent for-

remainder and providing, if possible, for a new growth in the future. Where lumbering has been completed upon state land or where the trees, though standing, are dead and dry—a tempting food for flame—let them burn over the slashings or the useless standing timber at a season

when the fire can be controlled. Thus by one act the ground can be made more suitable for a future growth, and less likely to start a fire of devastation in the dry months of late summer and autumn.

It would take but a few fires such as that of this year above Buffalo Park in

destroyed so much valuable timber in the vicinity of Eldora. It will be a new thing to prosecute with vigor any one thought to have caused a forest fire, but it is just what should be done whenever such a fire occurs and responsibility can be placed upon the right person.



A FOREST.

Platte cañon to cause a perceptible diminution in the summer and autumn flow off the Platte, and every resident of Denver as well as every ranchman from Platte cañon to Greeley, must view with apprehension any lessening, however slight, of the water supply in the city mains, or in the irrigation ditches of the Platte Valley.

The press has done and can do much to bring about a better understanding of the value of forests to the state. They can also do a good work by insisting that the forest laws be enforced. The *Denver Republican* has been especially active in trying to arouse the people of the state to a true appreciation of the present state of affairs. An editorial recently published in the *Republican* is reproduced here because it hits the nail squarely on the head:

"It is said that certain persons are under surveillance because of their supposed responsibility for the fires that have

"The time has come when there must be a determined effort to save the forests of this state. Their greatest danger is from fire, and the only way to prevent destruction in that way is to punish with severity every man who can be shown to have caused a forest fire, either purposely or through neglect.

"It has been suggested that the great fire near Eldora was started by persons who wished to secure a permit to cut mine timbers, permission of that kind being readily obtained for a fire-swept district, while the trunks of the large trees are so little injured, as a rule, that they make good timbers for shafts and drifts in a mine.

"Whether there is any foundation for this supposition we do not know, but all clues of that kind should be followed to the end, and no consideration should be shown any guilty man. An example should be made of all forest-fire fiends by

punishing them to the full limit of the law."

The forests of Colorado must be preserved for the public good; the future of agriculture depends upon it, and if the

people interested in mines wish to protect their investments they can do it in a great measure by encouraging the preservation of the remaining forests. Intelligent and immediate action is what is needed.

PRESIDENT ROOSEVELT'S VISIT TO THE YALE FOREST SCHOOL.

BY GEORGE DUDLEY SEYMORE.

THE most memorable chapter in the history of the Yale Forest School was written on Wednesday, October 23d, when the President of the United States singled out the School for a call during his brief visit to New Haven for Yale's Bi-Centennial Celebration.

The President arrived in New Haven in the morning, and after the conferring of degrees in the Hyperion Theatre, was driven to the home of his host, Mr. Wm. W. Farnam. Mr. Farnam's place is on Prospect street, nearly opposite the Yale Forest School, which occupies the beautiful stone house and extensive grounds of the late Professor Othniel C. Marsh, who bequeathed the property to the University.

At about half-past four, the President sent for Professor Henry S. Graves (Yale '92), Director of the Yale Forest School, and Mr. Gifford Pinchot (Yale '89), who was connected with the foundation of the School, and is a member of its Governing Board. As soon as this message was received, Professor Graves and Mr. Pinchot went over to Mr. Farnam's, where they were cordially received by the President. After a few minutes' conversation, the President, walking with Professor Graves, and followed by Mr. Pinchot, Mr. Farnam, Captain Cowles, of the Navy, and Mr. Cortelyou, walked leisurely through the grounds surrounding Mr. Farnam's residence and across the street to the Forest School.

The President seemed in the best of spirits, and in his conversation with Pro-

fessor Graves repeatedly expressed his keen interest in forestry. Arriving at the School, the President was received by Mr. and Mrs. James W. Pinchot, two of its founders. He asked to have each of the students, who were assembled on the west balcony of the house, presented to him. Professor Graves introduced the students and the President shook hands with each, and made some apt remark to every one of them. He kindled when he came to the students from Montana, Kansas, and Minnesota, and remarked afterwards that he was glad to know that the School was being attended by men from all parts of the Union.

After admiring the view from the balcony, and the extensive grounds of the School, the party entered the house where they were joined by Professor James W. Toumey. The party then moved from room to room, examining the School equipment. The President showed great interest in the School library, not merely looking at the room, but going to the book shelves and eagerly reading the titles. He expressed the wish that he might spend some time there examining and reading the books.

On leaving the building the President again expressed his interest in the School and the pleasure he had had in seeing it and the students. It is well known that the President is warmly interested in the subject of forestry, and it is expected that great advances will be made in national forestry during his administration.

THE BLACK HILLS FOREST RESERVE.

BY EDWARD M. GRIFFITH,
Bureau of Forestry.

THE Black Hills Forest Reserve of South Dakota contains approximately 1,215,000 acres including the Wyoming portion, which was added to the reserve by proclamation of President McKinley, September 19, 1898. Within the limits of the reserve, there is a population of about 25,000 who are chiefly engaged in mining, the annual output amounting to some \$3,000,000. Lead City, the principle mining center, where the Homestake Mine is located, has a population of 8,000 and is constantly growing, while Deadwood, its sister city, claims 5,000 people.

Custer, Hill City, Keystone, and Spearfish, towns of from 1,000 to 2,000 in-

wood; and the Homestake Mining Company also operates a narrow gauge road from the eastern foothills to Lead. So the cities, mines, and lumber mills have excellent railroad facilities.

The character of the country, as its name implies, is hilly, the average elevation being 5,000 feet, with Harney Peak 7,408 feet, the highest point. Granite is the prevailing rock on the east side of the Reserve, and limestone on the west.

Pinus Ponderosa, commonly called Yellow or Bull Pine, composes at least ninety per cent. of the timber, and is the only species which reaches a merchantable size. Spruce (*Picea canadensis*) is found in the gulches, and on some of the steepest



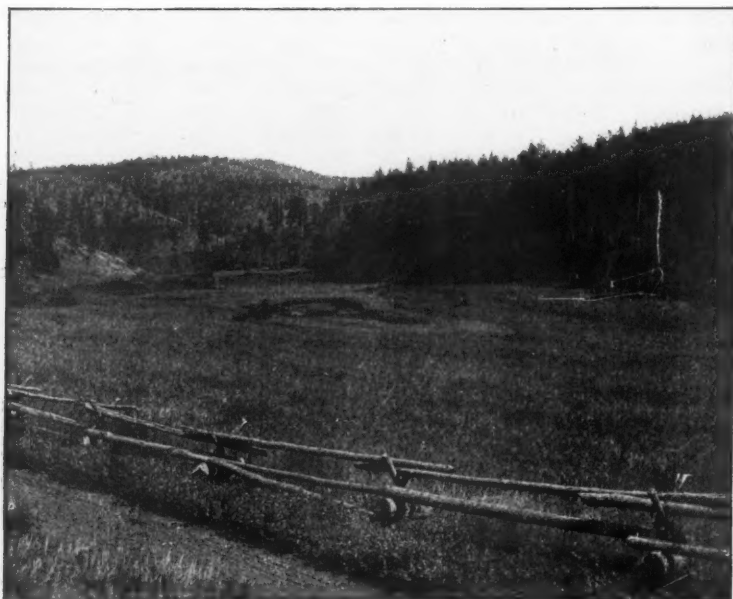
A SAWMILL COMMUNITY IN BLACK HILLS, SOUTH DAKOTA.

habitants, lie along the line of the Burlington and Missouri Railroad which crosses the Reserve from north to south. The Northwestern Line has a railroad on the east side of the Hills, which enters Dead-

slopes, but is too short and limber to be of any commercial value. Aspen (*Populus tremuloides*) comes up readily after fires and serves as an excellent nurse for the young pines.

These bodies of pine timber, are separated by long draws or gulches, which contain good agricultural land and usually enough water to serve the needs of a rancher. These draws are being rapidly settled upon by squatters much to the de-

serve as a whole, the amount of timber destroyed from this cause is surprisingly small. If the forest officers, in charge of the Reserve, can keep out the fires, the future of the forest is assured, for the natural reproduction of the pine, espe-



AN OPEN PARK OR DRAW, BLACK HILLS FOREST RESERVE.

light of the forester, who sees in these strips of cultivated land, separating bodies of timber, excellent natural fire lines. These squatters have developed some very valuable farms and are a desirable, hard-working class of settlers, who are directly and deeply interested in the welfare of the Reserve. For this reason it is hoped that the General Land Office will not carry out its threatened policy of expelling them from the Reserve.

The growth of grass, especially on the limestone soils, is very luxuriant, and will furnish feed for thousands of cattle or sheep. At present the law allows each rancher to run 120 head of cattle on the Reserve, but up to the present time no sheep have been permitted to graze within its boundaries.

Around the mining centers, in the northern part of the Hills, forest fires have done considerable damage, but taking the Re-

gion as a whole, the amount of timber destroyed from this cause is surprisingly small. If the forest officers, in charge of the Reserve, can keep out the fires, the future of the forest is assured, for the natural reproduction of the pine, espe-

cially on the granite soils, is remarkably fine. Planting will only be necessary in one or two sections in the north, where all the seed trees and young growth have been destroyed by repeated fires. The greatest enemy of the timber is the spruce and pine bark beetle (*Dendroctonus rufipinus*) which has destroyed the timber on whole townships in the northern Hills. This tremendous spread was undoubtedly partly due to the old wasteful methods of logging, which left all except the best logs to rot in the woods and so furnished a breeding place for legions of beetles. The only remedy seems to be to cut out the beetle-killed and infected timber as soon as possible, and insist on clean logging. No timber should be cut in spring or summer, as the beetles breed in the fresh cut tops and stumps when the sap is up. This season only a

comparatively small amount of timber has been killed and it is fair to infer that the worst of the destruction is over.

There are a large number of applications for timber and the demand for lumber, mining timbers, ties, cordwood, etc., reaches 60,000,000 feet, board measure, per year. This is below the amount which could safely be cut, but the demand is steadily increasing. Cutting is limited to a certain diameter, usually 12 inches on the stump, and the contractors are obliged to work up the tops into cordwood, and pile the brush away from the young timber, so that it can be burned. All trees above 12 inches, which are to be cut, are marked by the ranger, and he must also scale all logs, ties, or cordwood.

Tie cutting has been carried on to a

ready and willing to comply with any reasonable rules.

The forest force which supervises the work in the Reserve consists of a supervisor, and under him a force of rangers to each of whom a district is assigned, for which he is responsible. Twenty-eight rangers are employed in summer during the dry months, when there is the most danger from fire. The winter force numbers ten. Unfortunately these men are not trained foresters and often do not understand their work or sympathize with the forest reserve movement.

The question of water supply is as important to the people of the Hills as that of timber. Nearly all the main valleys and cañons contain small mountain streams, which generally have their rise in springs, but nevertheless many of them



EXCELLENT REGROWTH OF YELLOW PINE, AT AN ALTITUDE OF ABOUT 5,000 FEET,
BLACK HILLS FOREST RESERVE.

considerable extent, but the work is extremely unsatisfactory and the debris caused by the hewing of ties in the woods is a constant fire menace to the forest. The operations of the lumber mills, since they have been obliged to work the tops up into cordwood, are as praiseworthy as those of the mining companies. The latter are

are apt to run dry in the summer. In the northern Hills water is nearly as precious to the miner as gold, and in the foothills and plains streams are very valuable for irrigation. For this reason it is of the greatest importance that cutting be carefully restricted on the headwaters and slopes bordering on these streams.

Formerly the miners stripped the timber from the slopes of the streams on which their mines were located; now they are having the lesson of the relation of forests to stream flow driven home very forcibly. They are obliged to spend thousands of dollars building flumes to convey water from other streams, which have not been cut over. The mine owners especially have come to realize, by bitter experience, that their properties are nearly worthless without wood and water; and they will heartily support the Government in measures looking toward forest protection.

One of their greatest needs is for cordwood, and they are often willing to buy the dead standing and down timber without touching the green timber. Under such conditions where there is a steady demand for cordwood, which can be made from the tops and dead timber, an ad-

equate supply is in this way easily secured, while the forester can depend on a fine natural reproduction for restocking the blanks produced by lumbering. An excellent system of roads throughout the Reserve, makes practicable the transportation of lumber and logs for long distances.

The revenue from the sale of timber in the Black Hills Forest Reserve, is sufficient to pay for its supervision, and also that of the Big Horn and Teton Reserves in Wyoming. In point of revenue, demand for timber, population, and accessibility it is the most important of all the forest reserves. Public sentiment favors it heartily, and the Reserve to be of great economic value to the community, only needs a thoroughly honest, efficient, and business-like administration, which, in the past, unfortunately, has often been lacking.

THE HARRIMAN ALASKA EXPEDITION.*

Illustrations reprinted here through the courtesy of Doubleday, Page & Co.

Although there has been a steady stream of books and magazine articles on Alaska during recent years, the publication in popular form of the results of the Harriman Alaska Expedition, of 1899, will be welcomed by the public.

This work contains the results of one of the most remarkable scientific expeditions ever organized, and the discoveries made by the Harriman party in the fields of zoology, botany, ornithology, etc., are of the greatest value.

The Expedition was originally planned by Mr. Edward H. Harriman, as a summer cruise for the pleasure and recreation of his family and a few friends. It was at first intended to proceed along the Alaska coast only as far as

Kadiak Island. For the comfort and safety of his family a large steamer and crew was required, and as preparations



ESKIMO WOMEN, PLOVER BAY.

*The Harriman Alaska Expedition, published by Doubleday, Page & Co. New York. 1901. 8vo, with 40 colored plates, 85 photographs, 5 maps, and 240 illustrations in the text. 2 pp. 500, 2 vols. Price \$15.00, net.

were on a scale disproportionate to the size of the party, Mr. Harriman decided—to use his own words—“to include some guests who, while adding to the in-



SEALS.

terest and pleasure of the expeditions would gather useful information and distribute it for the benefit of others."

In planning the research work and in selecting the scientific personnel of the party Mr. Harriman was assisted by Dr. C. Hart Merriam. From the preface of the work we learn that "many of the invited members were connected with the Washington Academy of Sciences, and the interest shown by them soon came to be shared by that organization, which gave its hearty coöperation; under its auspices the scientific results are now being published."

To quote further from Mr. Harriman's prefatory remarks: "Although big game played an important part in the original plan, no extended or organized effort for hunting was made, the sportsmen unselfishly foregoing their own pleasure and allowing the scientific workers to use their camp equipment. Much valuable time was thus saved and we were enabled to extend the cruise to the Seal and other islands of Bering Sea, and also to the coast of Siberia and Bering Strait."

The expedition was organized by Mr. Harriman in coöperation with the Washington Academy of Sciences, but entirely at his own expense, in the spring of 1899. The party included as Mr. Harriman's guests three artists and 25 scientists.

SCIENTIFIC PARTY.

Prof. Wm. H. Brewer,
Yale University.

John Burroughs, Ornithologist and Author.

Dr. Wesley R. Coe,
Yale University.

F. V. Coville, Botanist, U. S. Dept. of Agriculture.

Dr. Wm. H. Dall, Paleontologist of the U. S. Geological Survey.

W. B. Devereux, Mining Engineer, Colorado Springs, Col.

Daniel G. Elliott, Field Columbian Museum, Chicago.

Prof. Benj. K. Emerson, Geologist, Amherst College.

Dr. B. E. Fernow, Director N. Y. State College of Forestry.

Dr. A. K. Fisher, Biological Survey, Washington, D. C.

Henry Gannett, Geographer, U. S. Geological Survey.



UYAK BAY, KADIAK ISLAND.

G. K. Gilbert, Geologist, U. S. Geological Survey.

Dr. George Bird Grinnell, Editor of *Forest and Stream*.

Thomas H. Kearney, Jr., Assistant Botanist, U. S. Dept. of Agriculture.

Charles A. Keeler, Director of Museum, California Academy of Sciences.

Prof. Trevor Kincaid, Zoologist, University of Washington.

Dr. C. Hart Merriam, Chief of the Biological Survey, Washington, D. C.

John Muir, Author and Student of Glaciers.

Dr. Charles Palache, Mineralogist, Harvard University.

Robert Ridgway, Curator of Birds, U. S. National Museum.

Prof. Wm. E. Ritter, President California Academy of Sciences.

De Alton Saunders, Botanist, South Dakota Experiment Station.

Dr. William Trelease, Director Missouri Botanical Garden.

ARTISTS.

R. Swain Gifford, New York.

Fred. S. Dellenbaugh, New York.

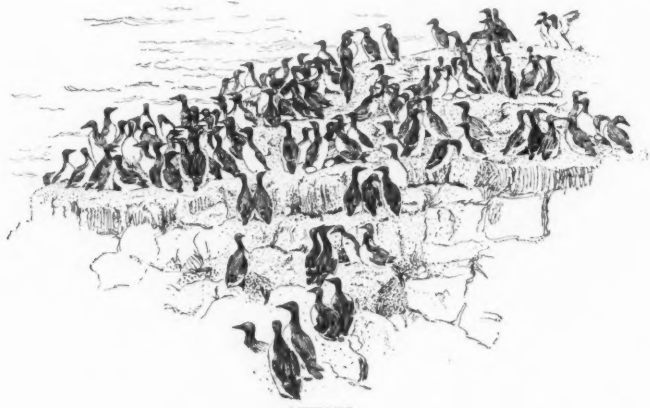
Louis Agassiz Fuertes, Bird Artist, Ithaca, N. Y.

The eastern members of the party left New York for Seattle by special train on May 23, 1899, meeting the other members at Seattle. From this point the expedi-

northward among the forested islands and fiords of the "inside passages"; from Sitka a northwesterly course was followed passing the glaciers and snow-capped peaks of the Fairweather and St. Elias ranges; from Cook Inlet the course was changed to the southwest and the Alaskan Peninsula, Aleutian Islands, Kadiak and the Shumagins were visited; at Unalaska the course was again northward into the Bering Sea, stops being made at Bogoslof Volcano, Fur Seal Islands, the islands of Hall, St. Matthew, and St. Lawrence. Visits were also made at the Eskimo settlements on both the Asiatic and American coasts and then the homeward journey began.

Among the scientific results of this expedition is a greatly increased knowledge of the fauna and flora of Alaska. Important collections were made of the small mammals and birds of the coast region, many marine animals, seaweeds and the largest collection of insects and land plants ever brought from Alaska. The collection of photographs made numbers nearly five thousand and is easily the best series of pictures of this region.

The facilities for exploration were of the best; the expedition had a ship with no



MURRES.

tion sailed for Alaska on May 30th, on the steamship *Geo. W. Elder*, especially chartered for the purpose, and was gone just two months.

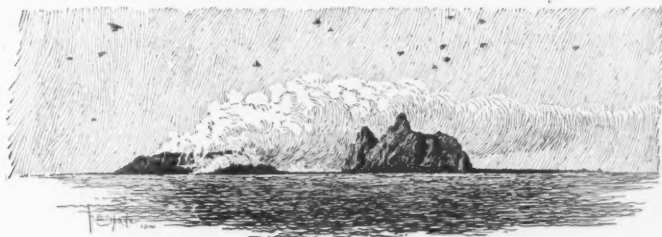
During the two months' cruise a distance of 9,000 miles was covered and the route taken was as follows: From Puget Sound to Juneau and Lynn Canal, thence

other business than to carry the party wherever it cared to go. The equipment also included naptha launches, small boats and canoes, camping outfits, stenographers, photographers.

The two volumes composing this work contain the narrative of the expedition and ten articles of general interest. "The Nar-

rative of the Expedition," by John Burroughs, the well-known author and ornithologist, is a splendid piece of travel description, and the one hundred and eighteen pages covered by it alone would make a most delightful book. "The Pacific Coast Glaciers" is one of the most important of the ten papers and was contributed by John Muir. The other papers are: "Natives of the Alaska Coast Region," by George Bird Grinnell; "The Discovery and Exploration of Alaska," by William Healey Dall; "The Forests of Alaska,"

scientists to accompany him, "that they might gather useful information and distribute it for the benefit of others," has been abundantly realized. But for the liberality of Mr. Harriman, the great amount of valuable information concerning Alaska collected by the members of his party in a few months, might not have been secured for many years yet. He may also be given credit for introducing a new form of recreation, which if followed by men of wealth hunting novelty, will result in much good to the great mass of people. Dr.



THE NEW AND OLD VOLCANOES IN 1850, FROM PHOTOGRAPH BY U. S. FISH COMMISSION.

by Dr. Bernhard E. Fernow; "Days Among Alaska Birds," by Charles Keeler; "Geography of Alaska," by Henry Ganett; "The Atmosphere of Alaska," by William H. Brewer; "Bogoslof, Our Newest Volcano," by C. Hart Merriam; "The Salmon Industry," by George Bird Grinnell, and "Fox Farming," by M. F. Washburn. There are also two poems, "Alaska," by Charles Keeler, and "The Inuit People," by William Healey Dall.

The two volumes included in this work contain a general summary in popular form of the work accomplished by the Harriman Alaska Expedition. The technical matter, in the fields of geology, paleontology, zoölogy, and botany, will follow in a series of illustrated volumes.

Mr. Harriman's hope, in inviting the

Merriam's work in preparing these volumes for publication reflects the greatest credit on his ability as an editor. The book is most readable and has been compiled in a manner to delight the general reader. All in all Dr. Merriam seems to have been a valuable member of the expedition.

The volumes are illustrated in a striking manner with colored reproductions of birds, animals, flowers, and landscapes. There are also many photogravures, and hundreds of pen drawings. Taken as a whole the work is a splendid piece of book-making, and great praise is due the publishers for the unusually attractive manner in which they have presented the records of this remarkable scientific expedition. This work will undoubtedly be the final authority on Alaskan matters for many years.

RECENT PUBLICATIONS.

Important Philippine Woods. By CAPTAIN GEORGE P. AHERN, Director of Forestry Bureau of the Philippines. Pp. 112. 44 colored plates. Published at Manila.

This handsome volume was prepared by Captain Ahern in order to satisfy the many inquiries concerning the Philippine forests, and the characteristics of the leading timber tree species.

The book contains eight chapters and there is considerable information given about the exploitation of these forests. There are descriptive notes on fifty important tree species, the strength and weight and uses of the woods. There is a chapter on gutta percha, and extracts from the forest regulations in the Philippines. The value of this book is greatly increased by the many

colored plates. Altogether it is a work of considerable value, especially to persons interested in the forests and botany of the Philippine Islands.

The History of a Trade-Mark. By OLIN D. WHEELER. Published by Chas. S. Fee, St. Paul, Minn. Pp. 31. Illustrated.

In this nicely illustrated booklet is given a concise history of the adoption of the unique trade-mark of the Northern Pacific Railroad. From the time of Chow Lien Ki and his wonderful cave is a long cry, but the symbol of the Great Monad evolved in 1017 A. D., is now emblazoned on the cars, offices, stationery, etc., of a great transcontinental railroad and is indeed a most striking trade-mark. Mr. Wheeler has told the history of the Great Monad very cleverly and the little book is well worth having.

The Northern Pacific as a railroad system is fully as remarkable as its trade-mark and under its present active management is doing wonders in assisting in the development of the great Northwest.

A Souvenir of Plymouth Parks. By A. S. BURBANK. Plymouth, Mass., 1901. Illustrated with 46 half-tones.

This handsome souvenir book contains a brief history of the parks of Plymouth, Mass., and is illustrated profusely with splendid engravings. The people of Plymouth are to be congratulated on their series of beautiful parks, and many larger and wealthier cities will do well to follow the example they set in providing recreation spots for the people. The frontispiece to the volume is a picture of Nathaniel Morton, President of the Park Commission.

THE MAGAZINES FOR NOVEMBER.

A welcome newcomer in the magazine world is *Country Life in America*. Ordinarily the appearance of a new magazine in the already crowded field, would cause one to fear for the safety of the bank account of the persons financing the venture. However, in the case of *Country Life in America*, it seems the publishers, Doubleday, Page & Co., are appealing to a class that will gladly welcome their new periodical. As the name implies this magazine deals with country life, and if the excellence of the first number is maintained, there is little doubt of its success.

Mr. Liberty H. Bailey, a well-known writer on the subjects to which this magazine will be devoted, is the editor. The opening number contains a number of interesting illustrated articles, the two best being by Mr. Bailey on "The Abandoned Farms," and "Ellerslie, An American Country Seat." The literary excellence of *Country Life in America* is made doubly effective by the great number of splendid illustrations used. It is not too much to say that this magazine is one of the most artistic published.

Scribner's Magazine, always attractive, contains a number of interesting articles this month. The first installment of a new novel by F. Hopkinson Smith, entitled "The Fortunes of Oliver Horn" is given. "The Pines of Lory," by J. A. Mitchell, is continued, and

Theodore Roosevelt contributes a second paper concerning experiences "With the Cougar Hounds." Notable articles are: "Russia of To-Day," by Henry Norman; a third paper on the "United States Army," by General Francis V. Greene; "Marquis Ito," and "Among the Dunkers."

The *World's Work* for November contains an article of great interest to readers of the *FORESTER*, on "The Proposed Appalachian Forest Reserve," by Dr. W. J. McGee, chief of the Bureau of American Ethnology. In this article, which is splendidly illustrated, Dr. McGee insists that the only method of preserving the most attractive scenic region in eastern America is by establishing the proposed reserve. He further argues that public sentiment, science and health demand the saving of the stream sources. This number also contains a number of other timely articles among which are: "Japan and the United States," by Midori Komatz, Secretary Japanese Legation at Washington; "Problems of the British Empire," by Sydney Brooks; "The Pivotal Farm of the Union" by Liberty H. Bailey; and the "Beautifying of Cities" by Charles H. Caffin. Altogether this is one of the best numbers of the *World's Work* that has yet been published.

Outing for November, though more especially a football number, contains several interesting articles on other phases of out-door life, among which are: "My First Bull Moose," "Wild Geese in the Northwest," "Bits of Woodcraft," and "Photographing the Belted Kingfisher." There has been great improvement in the illustrations and printing of this number, and in spite of being handicapped by a hideous cover design the November *Outing* is by far the most attractive number yet published.

McClure's contains among a number of excellent articles, a character sketch of President Roosevelt by William Allen White; Ray Stannard Baker explains "What the United States Steel Corporation is, and How it Works."

The Review of Reviews has articles on "The New York Municipal Campaign" with sketches of the leading candidates, and the Philadelphia campaign is also described. There are two articles on the war in the Philippines, and John S. Wise writes on the "Efforts to Preserve Game." The *Cosmopolitan* for November like nearly all the magazines for the month contains articles on President Roosevelt and the New York campaign. *The National Geographic Magazine* has an article on "The Sex, Nativity and Color of the People of the United States," compiled from Census Bulletin No. 103. Dr. William L. Bray has an interesting illustrated article in *The Botanical Gazette* on the "Vegetation of Western Texas." The *Saturday Evening Post* announces a series of articles on "The White Invasion of China" by Senator Beveridge, of Indiana. *Current Advertising* for November is an unusually handsome number and is filled with valuable information for all persons interested in advertising. Mr. Bates has proven that an advertising magazine can be made interesting even to the general reader.

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